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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,708	11/05/2003	Ju-Chien Chiang	N1085-00195 [TSMC2003-024	7074

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EXAMINER	
MARKOFF, ALEXANDER	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/701,708	CHIANG ET AL.	
	Examiner	Art Unit	
	Alexander Markoff	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13, 15 and 17-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-13, 15 and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are indefinite because the independent claims require application of "an aqueous composition comprising an effective amount of (a) hydrogen fluoride, followed by (b) a mixture of ..." It is not clear what is considered as "composition". It is also not clear for what purpose the amount is required to be effective.

This rejection was made in the previous office action. The applicants failed to clarify the issue. For the examination purposes the claims are again interpreted as requiring sequential application of a first composition, which comprises hydrogen fluoride, followed by application of a second composition, which comprises the recited mixture.

Claims 1-9 are indefinite as amended because it is not clear what is required by the clause starting with "wherein".

Claims 10-13, 15 and 17-18 are indefinite as amended. This is because it is not clear how can the physical cleaning comprised the recited method for removing. It is

also not clear whether or not any manipulative steps are required by the recitation of the megasonic physical cleaning in preamble.

10-13, 15 and 17-18 are also indefinite because the terms "the megasonic physical cleaning", "the cleaning" and "the aqueous cleaning composition" in claim 10 lack proper antecedent basis.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Prior to making the art rejections the examiner makes the following comment with respect to claims 10-13, 15 and 17-18:

It is noted that the claims recite a method for removing by-products, and that some dependent claims specify the by products. However, these limitations are presented only in preamble of the claims and the referenced dependent claims only

specify the preamble. The body of the claims does not depend on the preamble for completeness but, instead, the process steps are able to stand alone.

No patentable weight has been given to the referenced recitation of the by-products because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Such interpretation of the claims was made in the previous Office action. The applicants failed to rebut the interpretation or amend the claims to positively recite the removal of the recited residue.

It is also noted that the claims as amended recite megasonic physical cleaning in the preamble. It is again noted that a preamble is generally not accorded any patentable weight where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone.

5. Claims 1, 3, 4, 8-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Park et al (US 2003/0235947).

Park et al teach a method as claimed. See entire document, especially part [0026].

Since the physical manipulative steps of the method of Park et al are the same as the steps of the claimed method the results of the method is inherently the same.

6. Claims 1-6, 8-13, 15 and 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Barnett et al (US 2005/0070120).

Barnett et al teaches a method as claimed. See entire document, especially part [0030].

Since the physical manipulative steps of the method of Barnett et al are the same as the steps of the claimed method the results of the method is inherently the same.

7. Claims 1, 2, and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Brask et al (US 2005/0048794).

Brask et al teach a method as claimed. See entire document, especially part [0008].

Since the physical manipulative steps of the method of Brask et al are the same as the steps of the claimed method the results of the method is inherently the same.

Response to Arguments

8. Applicant's arguments filed 3/15/06 have been fully considered but they are not persuasive. The applicants amended the claims and argue that the rejections made in the previous Office action are overcome and claims allowable.

The examiner disagrees. The amended claims are addressed in the rejections above. It is noted that the claims requiring specific temperature are not and were not previously rejected over the references not reciting such temperature

It is also noted that the applicants merely state that the claims as clarified overcome the rejections, The applicants failed to specifically point out how the language of the claims patentably distinguishes them from the references.

The examiner would like to make a following comment: It is possible that the applicants inventive process intended to be recited by the amended claims comprises providing a substrate having thereon a residue of by-products of a high-k dielectric etch process and removing the residue by sequential application of a first aqueous composition comprising hydrogen fluoride, followed by application of a second composition, which is a mixture of hydrogen peroxide with a compound selected from ammonium hydroxide, hydrochloric acid and sulfuric acid. It is also believed that some of the claims as amended are intended to recite that the first step is conducted at a temperature from 15 to 90 degrees of C and that some of the claims also require the method to comprise a step of megasonic cleaning.

Since the claims are not such limited no rejection is provided to address such limitations. However, the examiner would like to bring the applicants' attention to the teaching of the Handbook of Semiconductor Wafer Cleaning Technology, which shows that the cleaning sequence and other limitations of such process are conventional in the art.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander Markoff
Primary Examiner
Art Unit 1746

AM

ALEXANDER MARKOFF
PRIMARY EXAMINER